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Approved for public release; distribution is unlimited.

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The views, opinions and/or findings contained in this report are those of the author(s) and should not contrued as an official Department of the Army position, policy or decision, unless so designated by other documentation.

14. ABSTRACT

15. SUBJECT TERMS

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a. REPORT	b. ABSTRACT	c. THIS PAGE			Jorge Lopez
UU	UU	UU	UU		19b. TELEPHONE NUMBER 915-747-7528

RPPR Final Report
as of 16-Oct-2018

Agency Code:

Proposal Number: 68846ELREP **Agreement Number: W911NF-16-1-0550**
INVESTIGATOR(S):

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Report Date: 30-May-2018 Date Received: 23-Aug-2018

Final Report for Period Beginning 01-Sep-2016 and Ending 28-Feb-2018
Title: Surface Characterization of Materials
Begin Performance Period: 01-Sep-2016 **End Performance Period:** 28-Feb-2018
Report Term: 0-Other

Submitted By: Jorge Lopez Email: jorgelopez@utep.edu
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Distribution Statement: 1-Approved for public release; distribution is unlimited.

STEM Degrees: 2 **STEM Participants:** 0

Major Goals: The University of Texas at El Paso (UTEP) requested funds to acquire a PHI 5600 MultiTechnique System and an ATC Orion 5 UHV Sputtering System for research and instruction in science and engineering. The equipment is to be used to add a new dimension to the study of materials at UTEP. The requested equipment will interface with existing equipment resources and it will upgrade current facilities and capabilities augmenting our capabilities to perform top research, while offering our minority students outstanding instruction and research experiences.

Accomplishments: The University of Texas at El Paso acquired a PHI 5600 MultiTechnique System and an ATC Orion 5 UHV Sputtering System for research and instruction in science and engineering.
The equipment was installed in the Physical Science Building room PCI 129 where new floors, lights, gas, electricity and compressed air were installed.

In terms of human resources, one high school student, three undergraduate, one MS student, two PhD student and

one postdoctoral researcher were trained in the use of the equipment,

During the duration of the grant, six articles were published and one talk was delivered at an international conference.

Training Opportunities: The following individuals received training to operate the equipment bought under the grant:

1. High School student Andrea Valdez-Rivas
2. Undergraduate physics major Jeremiah Lopez
3. Undergraduate physics major Yahir Garay
4. MS student Enrique Ramirez-Homs
5. PhD student Maria Magdalena Montserrat-Turrubiartes
6. Postdoctoral researcher Carlos Diaz-Moreno

Results Dissemination: Organized an REU with two students.

PRESENTATION
1. Temperature affects in the composition of metal halide perovskite thin films, presented by Jorge A. Lopez at the XIV international Symposium on Radiation Physics, Puebla, Mexico, May 21-25, 2018.

PUBLISHED
1. Article "Optical Properties of Ferroelectric Lanthanum Lithium Niobate", C. Diaz Moreno, Ding, Y., Li, , J. Portelles, J. Heiras, A. Hurtado Macias, A. Syeed, A. Paez, C. Li, Jorge López, Ryan Wicker, J. Ceramics International, 44, 4727-4733, (2018).

2. Article "XPS Study of the Oxidation State of Uranium Dioxide", J.A. López et al., J. Nuc. Phys., Mat. Sci., Radiation and Applications, Vol-5, 237–242, 2017.

3. Article "Electrocatalytic hydrogen gas generation by cobalt molybdenum disulfide synthesized using alkyl-containing thiomolybdate precursors" Y. Wu et al., International Journal of Hydrogen Energy, 1-8, (2017); https: //doi.org/10.1016/j.ijhydene.2017.07.028.

4. Article "Relaxor ferroelectricity, ferromagnetic and optical second harmonic properties in lanthanum lithium niobate (La0.05Li0.85NbO3) nanoparticles", C. Diaz Moreno et al., J. Magnetism and Magnetic Mats., 433, (2017) 262–270.

5. Article "Temperature effects in the composition of metal halide perovskite thin films",
M. Castro-Colin, I. BanueloS , C. Diaz-Moreno, D. Hodges, E. Ramirez-Homs, D. Korolkov, N. Sharmin, and J. A. Lopez. J. Nuc. Phys., Mat. Sci., Radiation and Applications, 6, 57-74, 2018.

SUBMITTED
6. Article "Green Chemistry-based Facile One-Pot Synthesis of Cu-BDC/Graphene Oxide and Cu-BDC/CNT Hybrid Nanocomposite as Nanoscale Adsorbent for Water Treatment",
Md. Ariful Ahsan, Vahid Jabbari, Md Tariqul Islam, Noemi Dominguez, Edison Castro, Jorge Lopez, Juan C. Noveron. Submitted to Chemical Engineering Journal.

7. Article "Multiferroic and Optical Properties of La0.05Li0.85NbO3 and LiNbO3 Nanocrystals", Carlos A. Diaz-Moreno , Jorge A. Lopez, Yu Ding, A. Hurtado Macias, Chunqiang Li, and Ryan B. Wicker. Submitted to Journal of nanotechnology

Honors and Awards: 1. July 26, 2017: Thesis Defense, of my M.S. student Nazia Sharmin; "Time degradation of perovskites".

2. Jorge Lopez was Inducted into the Academy of Distinguished Former Students of Texas A&M University, College Station, Texas.

Protocol Activity Status:

RPPR Final Report
as of 16-Oct-2018

Technology Transfer: Nothing to Report

PARTICIPANTS:

Participant Type: High School Student
Participant: Andrea Valdez-Rivas
Person Months Worked: 2.00 **Funding Support:**
Project Contribution:
International Collaboration:
International Travel:
National Academy Member: N
Other Collaborators:

Participant Type: Research Experience for Undergraduates (REU) Participant
Participant: Jeremiah Lopez
Person Months Worked: 2.00 **Funding Support:**
Project Contribution:
International Collaboration:
International Travel:
National Academy Member: N
Other Collaborators:

Participant Type: Undergraduate Student
Participant: Yahir Garay
Person Months Worked: 10.00 **Funding Support:**
Project Contribution:
International Collaboration:
International Travel:
National Academy Member: N
Other Collaborators:

Participant Type: Graduate Student (research assistant)
Participant: Enrique Ramirez-Homs
Person Months Worked: 12.00 **Funding Support:**
Project Contribution:
International Collaboration:
International Travel:
National Academy Member: N
Other Collaborators:

Participant Type: Graduate Student (research assistant)
Participant: Maria Magdalena Montserrat Contreras-Turrubiartes
Person Months Worked: 6.00 **Funding Support:**
Project Contribution:
International Collaboration:
International Travel:
National Academy Member: N
Other Collaborators:

Participant Type: Postdoctoral (scholar, fellow or other postdoctoral position)
Participant: Carlos Diaz-Moreno
Person Months Worked: 12.00 **Funding Support:**
Project Contribution:

International Collaboration:
International Travel:
National Academy Member: N
Other Collaborators:

Participant Type: Graduate Student (research assistant)
Participant: Nazia Sharmin
Person Months Worked: 6.00 **Funding Support:**
Project Contribution:
International Collaboration:
International Travel:
National Academy Member: N
Other Collaborators:

DISSERTATIONS:

Publication Type: Thesis or Dissertation
Institution: University of Texas at El Paso
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Title: TIME DEGRADATION OF PEROVSKITES
Authors: Nazia Sharmin
Acknowledged Federal Support: **Y**

Nothing to report.